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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/069,049

02/21/2002

David A Nadin

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7590

10/31/2003

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EXAMINER

GARBER, CHARLES D

ART UNIT

PAPER NUMBER

2856

DATE MAILED: 10/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/069,049

Applicant(s)

NADIN, DAVID A

Examiner

Charles Garber

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5 and 6 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

Please note, earlier indication of allowance of claim 7 is hereby withdrawn.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnston et al. (US005404747A) in view of Newbil, Jr. (US002647399A), Schupack et al. (US004979390A), Bogle et al (US005319956A) and Bosselaar (US003738156A).

Regarding claim 1, Johnston discloses a portable vacuum test tool to be used for detection of leaks around sealed areas of structure to be pressurized (title and column 1 lines 6-8) including an air impervious seal sheet 15 or vacuum tight cover which is sealed to the surface of the structure as shown in figure 3 where a leak may exist.

The structure 42 of the reference is considered to be empty in the same manner as the container of the reference as there is no provision in the instant invention to remove all fluid from the container including liquid and particularly gas fluids and it appears the invention may only work while there is gaseous fluid still remaining in the container. Further the structure of the reference is intended to be tested during production or scheduled maintenance when there is typically no cargo within the structure but there is still gaseous fluid within.

Johnston however does not expressly seal the sheet or cover circumferentially which Examiner interprets to be a specific sealing feature along the cover periphery based on a reading of the specification.

Newbill teaches a seal 7 around the circumference or periphery of suction sheet 5 placed against a structure 1 (column 2 lines 7-12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to place a seal around the circumference of a suction sheet in order to prevent leakage of air around the open edges.

Johnston further discloses removing the air between the cover and sealed region of the surface by virtue of the vacuum source 70 fluidly connected to the sheet through a plenum 25 and inlet area 28. Johnston also discloses using a leak detection device 95 to check suspect areas and "pinpoint" the exact location of the leak (column 3 lines 49-60).

Johnston lacks measuring the vacuum between the cover and the sealed region of the surface; comparing the measured vacuum with a predetermined acceptable datum vacuum value, and, where the measured vacuum exceeds the datum vacuum.

Schupack discloses testing the permeability of materials (title) including a test apparatus 10 that is placed over the material to form a localized seal as shown in figure 1. In this case, permeability is an indication of the material's tendency to leak air when the material is of poor quality containing cracks and fissures (abstract). Schupack teaches developing a reference baseline pressure decay value with a specimen of good quality which is equivalent to obtaining a a predetermined acceptable datum vacuum

value as in the instant invention (column 9 line 67 to column 10 line 15). Schupack further teaches measuring test structure and comparing the decay rate with the reference decay rate. If the test decay rate is greater by a certain percentage the test structure is compromised (column 10 lines 16-25). This is considered equivalent to measuring the vacuum between the cover and seal region and comparing the measurement to an acceptable datum or reference where the vacuum exceeds the reference (in this case some percentage more than a pristine sample).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to test a material with a vacuum decay process in the manner above in order to advantageously identify material in a structure that has been compromised.

Johnston is unclear whether the detection device 95 is to be used on the outside of the structure or the inside upon gaining access as in the instant invention. Johnston simply recites the detector, such as a listening tube, is brought into proximity of the seal and shows detector in figure 3 indeterminately off to the side (column 3 lines 49-60).

Bogle teaches accessing the inside of a tank 10 in order to position a microphone 100 inside the unfilled portion of the tank and listen for leaks (abstract and figure 1). The microphone is placed inside the tank because access to the outside of the tank to listen for leaks is blocked, in this case by the surrounding ground.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to place a microphone on the inside of a tank to listen for leaks when there is interference in accessing the structure outside the tank.

Finally, Johnston does not expressly teach recording the exact location of the source of fluid leaks.

Bosselaar teaches leak detection provided with recording equipment for recording the location of the leak (column 1 lines 21-24).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to record the location of the leak so that the defective area can be later repaired by personnel trained and equipped for effecting structural repairs. Typically, non-destructive inspection (NDI) technicians and repair personnel are not one in the same and repair personnel would need some indication of where defects have been found.

As for claim 2, Schupack further teaches circumferentially sealing and removing air from a local region on a surface where there are no joins or seams and recording the maximum consistent vacuum achieved as the datum vacuum value. This is done to determine if the material itself is compromised.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to test in an area where there are no seals or joins in order to determine if the material of a structure itself is compromised. Material compromised in this manner would be of unacceptable strength (column 1 lines 47-50).

As for claim 5, Johnston discloses the leak detector used is an ultrasonic leak detector (column 3 lines 49-60).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnston et al. (US005404747A) as modified by Newbil, Jr. (US002647399A), Schupack et al.

(US004979390A), Bogle et al (US005319956A) and Bosselaar (US003738156A) and applied to claim 1 above and further in view of Nondestructive Testing Handbook of the American Society For Nondestructive Testing (henceforth, NDT Handbook).

Claim 3 is substantively equivalent to claim 1 except for measuring the vacuum over a predetermined period of time which is not expressly taught in the references. However, the NDT Handbook teaches a short duration pressure test in order to calculate the leakage rate (pages 218 and 219). The test is conducted over a short period of time ΔT and only pressure is measured

It would have been obvious to one having ordinary skill in the art at the time the invention was made to test for a predetermined short period of time so that "only" measurement of one parameter, namely pressure, need be undertaken.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnston et al. (US005404747A) as modified by Newbil, Jr. (US002647399A), Schupack et al. (US004979390A), Bogle et al (US005319956A) and Bosselaar (US003738156A) and applied to claim 1 above and further in view of Frenkel et al. (US005182941A)

The reference lack repairing the leak source and repeating the method and repairing any further sources found. Frenkel discloses a pressure based leak test teaching the "leak detection cycle ... is repeated to detect any leaks missed in the first ... or that were not properly repaired or corrected. The pressurization, detection and repair cycle is repeated until no more leaks are found".

It would have been obvious to one having ordinary skill in the art at the time the invention was made to repeat a leak detection test after repair of a previously detected

leak in order to advantageously ensure leaks are properly repaired and that all leaks are detected and repaired.

As discussed above, the Johnston reference previously taught the structure at least filled with gaseous fluid in order for there to be a passage of fluid to the vacuum side to create a detectable source of leakage.

Allowable Subject Matter

Claims 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art does not disclose or suggest the invention of claim 1 further including the step of using a leak detector to detect air leakage from said bagged region of the surface after the step of removing the air between the cover and the surface and if air leakage is detected appropriately repairing the cover or its seal to the surface.

Claim 7 is allowed.

Claim 7 is substantively equivalent to claim 1 but for specifically testing a fuel tank for leaks with vacuum bagging, however, the prior art does not disclose or suggest the invention substantially according to claim 1 further including the step of specifically testing a fuel tank for leaks with vacuum bagging.

Conclusion

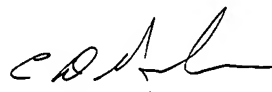
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The additional references cited on the accompanying form PTO-892 though not cited above are provided to indicate other prior art leak test or vacuum bagging methods and apparatus which include one or more features or limitations in common with the instant invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Garber whose telephone number is (703) 308-6062. The examiner can normally be reached on 6:30 a.m. to 3:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (703) 305-4705. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.



cdg
October 27, 2003